

- 21 -

1. A prosthetic implant configured for placement between opposing  
2 bones that apply pressure to the implant during articulation, the implant comprising:  
a fluid-filled reservoir; and  
4 a body coupled to at least one of the bones and the reservoir to provide  
cushioning during articulation.

2. The prosthetic implant of claim 1, wherein the body is a piston.

3. The prosthetic implant of claim 1, wherein the fluid is water or an  
2 aqueous solution.

4. The prosthetic implant of claim 1, wherein the fluid is a synthetic or  
2 naturally occurring oil.

5. The prosthetic implant of claim 1, wherein the fluid is an organic or  
2 inorganic oil.

6. The prosthetic implant of claim 1, further including superior and  
2 inferior endplates; and  
wherein the body is coupled to at least one of the endplates as part of an  
4 intervertebral disc replacement.

7. The prosthetic implant of claim 1, further including a proximal tibial  
2 component and a distal femoral component; and  
wherein the body is coupled to at least one of the proximal tibial and distal  
4 femoral components as part of a total knee replacement.

8. The prosthetic implant of claim 1, further including an acetabular  
2 component and a proximal femoral component; and  
wherein the body is coupled to at least one of the acetabular and proximal  
4 femoral components as part of a total hip replacement.

- 22 -

9. The prosthetic implant of claim 1, further including a valve or other  
2 device that allows the fluid to be expelled from the reservoir during the application of  
the pressure and drawn back into to the reservoir as the pressure is relieved.

10. The prosthetic implant of claim 1, wherein the fluid is expelled  
2 relatively rapidly from the reservoir during the application of pressure, and drawn  
back into the reservoir at a relatively slow rate as the pressure is relieved.

11. The prosthetic implant of claim 1, further including one or  
2 more springs to assist in moving the body from the reservoir as pressure is relieved.

12. The prosthetic implant of claim 1, further including a  
2 membrane to contain debris or particulates.

13. The prosthetic implant of claim 1, further including multiple  
2 reservoirs, each with a body coupled to one of the bones.

14. The prosthetic implant of claim 1, further including a wheel or  
2 other rolling component to control articulation.

15. The prosthetic implant of claim 1, further including a prosthetic  
2 femoral head to which the body is coupled.

16. The prosthetic implant of claim 1, wherein the fluid-filled reservoir is  
2 associated with an intramedullary stem.

17. The prosthetic implant of claim 1, wherein:  
2 the fluid-filled reservoir is disposed between the opposing bones and further  
including a second reservoir not disposed between the opposing bones; and  
4 fluid is transferred from the fluid-filled reservoir to the second reservoir when  
pressure is applied and returned to the fluid-filled reservoir when pressure is relieved.

- 23 -

18. The prosthetic implant of claim 1, wherein the fluid in the reservoir  
2 includes one or more biologic constituents.

19. The prosthetic implant of claim 18, wherein the biologic constituents  
2 include intervertebral disc cells.

20. The prosthetic implant of claim 18, wherein the biologic  
2 constituents include an extracellular matrix or analogues thereof.

21. The prosthetic implant of claim 1, further including a fluid permeable  
2 membrane having pores small enough to prevent cell migration while facilitating the  
transfer of nutrients and/or waste materials.

22. The prosthetic implant of claim 1, wherein the fluid-filled reservoir or  
2 other components may be customized to suit a patient's weight or activity level.

23. The prosthetic implant of claim 1, further including a return spring  
2 having a stiffness selected to suit a patient's weight or activity level.